

WHAT IS CLAIMED IS:

- 1. A method for preventing or minimizing loss of bone mineral in mammals which method comprises administering to a mammal an amount of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof which is effective to prevent or minimize loss of bone minéral density.
- 10 2. The method according to Claim 1 wherein said aminoalkylenephosphonate has at least one $R-N(Al_k-PO_3H_2)_2$ group wherein R can be an aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
- 3. The method according to Claim 1 wherein said aminoalkylenephosphonate has at least two RR'N-Alk-PO $_3$ H $_2$ groups wherein R and R' can be, same or different, aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.

20

25

- 4. The method according to Claim 2 or Claim 3 wherein the amine moiety of the aminoalkylenephosphonate represented by the R-N= and RR'N- in the R-N(Alk-PO $_3$ H $_2$) $_2$ and RR'N-Alk-PO $_3$ H $_2$ groups is derived from either an aliphatic or a cyclic polyamine in which hydrogen atoms bonded to the nitrogen atoms in the amine moiety are partially or completely substituted by an alkylphoshonate group.
- 5. The method according to Claim 1 wherein said aminoalkylenephosphonate is an aminomethylenephosphonate.
 - 6. The method according to Claim 1 wherein said aminoalkylenephosphonate is 3,6,9,15-tetraazabicyclo[9.3.1]tetradeca-1(15),11,13-triene-3,6,9-trimethylenephosphonic acid (PCTMP).

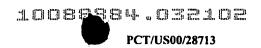
10

- 7. The method according to Claim 1 wherein said aminoalkylenephosphonate is 1,4,7,10-tetraaethylenephosphonic acid (DOTMP).
- 8. The method according to Claim 1 wherein said aminoalkylenephosphonate is N,N'-bis(methylenephosphonic acid)-2,11-diaza[3.3](2,6)pyridinophane (BP2MP).
- 9. The method according to Claim 1 wherein said aminoalkylenephosphonate is N,N-bis(methylenephosphonic acid)-2-(aminomethyl)pyridine (AMPDMP).
- 10. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof in the manufacture of a pharmaceutical formulation for preventing or minimizing loss of bone mineral in mammals.
- 20 11. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate has at least one R-N(Alk-PO₃H₂)₂ group wherein R can be an aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
 - 12. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate has at least two RR'N-Alk-PO₃H₂ groups wherein R and R' can be, same or different, aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
- 13. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 11 or Claim 12 wherein the amine moiety of the

10

30

35



aminoalkylenephosphonate represented by the R-N= and RR'N-in the R-N(Alk-PO₃H₂)₂ and RR'N-Alk-PO₃H₂ groups is derived from either an aliphatic or a cyclic polyamine in which hydrogen atoms bonded to the nitrogen atoms in the amine moiety are partially or completely substituted by an alkylphoshonate group.

- 14. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate is an aminomethylenephosphonate.
- 15. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate is 3,6,9,15-tetraazabicyclo[9.3.1]tetradeca-1(15),11,13-triene-3,6,9-trimethylenephosphonic acid (PCTMP).
- 16. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate is 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetramethylenephosphonic acid (DOTMP).
- 25 17. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate is N,N'-bis(methylenephosphonic acid)-2,11-diaza[3.3](2,6)pyridinophane (BP2MP).

18. The use of an aminoalkylenephophonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate is N,N-bis(methylenephosphonic acid)-2-(aminomethyl)pyridine (AMPDMP).